AMENDMENTS TO THE CLAIMS

1. (Previously Presented) Method for compensating thermal optical effects interacting with an optical beam in an arrangement containing optical components being traversed by said beam,

wherein for the purpose of compensation in a beam path of said beam being situated at least three optical transparent elements having a close thermal contact being used in co-operation,

adjacent elements of said at least three elements having different material properties,

said different material properties are

a different absorption for radiation of said beam,

a different thermal conduction or

a different thermal dispersion,

said different material properties causing the following effects

a heating by radiation absorption of said beam,

a distribution of temperature dependent on said heating by said thermal conduction and

creating a thermal lens for said beam by said thermal dispersion dependent on said temperature distribution;

for the purpose of compensation said effects being distributed over said at least three elements and there is no need for only one and the same element to fulfill all said functions.

2. (Previously Presented) Method according to Claim 1, wherein two not adjacent elements of said at least three optical elements are transparent optical solid bodies

and at least one of said at least three elements between said optical solid bodies being a compensating medium;

said optical solid bodies having a prescribed radiation absorption of the radiation of said beam by said absorption of the radiation of said beam and said thermal conduction said temperature distribution is created in said optical solid bodies,

said temperature distribution being imprinted by said close thermal contact to said compensating medium for compensating thermal optical effects in said optical components and said adjacent elements, respectively.

3. (Previously Presented) Method according to Claim 2, wherein said compensation medium and said adjacent solid bodies having peripheries, said peripheries are cooled to the same temperature.

4. (Previously Presented) Optical unit which can be brought into a beam path of an optical arrangement for compensating thermal optical effects of optical components present in a beam of said beam path of the optical arrangement, comprising

at least three optical transparent elements in said beam path for compensating

said at least three optical elements having a close thermal contact,

adjacent elements of said at least three elements having different material properties and cooperate effectively for said compensating,

said different material properties are

a different absorption for radiation of said beam,

a different thermal conduction or

a different thermal dispersion,

said different material properties causing the following effects

a heating by radiation absorption of said beam, a distribution of temperature dependent of said heating by said thermal conduction and creating a thermal lens for said beam by said thermal dispersion dependent on said temperature distribution; for the purpose of compensation said effects being distributable over said at least three elements and there is no need for only one and the same element to fulfill all said functions.

5. (Previously Presented) Optical unit according to Claim 4, wherein

two not adjacent elements of said at least three optical elements are transparent optical solid bodies having a radiation absorption, and

at least one of said at least three elements between said optical solid bodies being a compensating element,

said compensation element having an optical compensating space being filled with an optically transparent compensating medium,

said compensating medium having close thermal contact to said adjacent optical solid bodies in a manner that good heat transfer from the solid bodies to the compensation medium is ensured.

6. (Previously Presented) Optical unit according to Claim 5, wherein said compensation space extends perpendicular to the optical axis of the beam path.

7. (Previously Presented) Optical unit according to Claim 5, wherein a radial extent of said compensation space relative to the optical beam path is identical to that of the adjacent solid bodies.

8. (Previously Presented) Optical unit according to Claim 5, wherein the solid bodies adjacent to said compensation medium are held with the aid of a cooling holder.

9. (Previously Presented) Optical unit according to Claim 5, wherein

said compensation medium being a material which transmits no mechanical shear forces, and

an expansion space is connected to said compensation space into which said compensation medium can undertake volumetric equalization in the event of thermal loading.

10. (Currently Amended) Optical arrangement having a beam path and an optical unit for generating or amplifying radiation having an optical active medium,

said radiation being a beam traveling at said beam path,

said unit being part of optical arrangement,

said optical active medium being divided into partial separated optical solid media,

said unit comprising at least three transparent optical elements,

two of said at least three elements situated at each side of an optical third element of said ~~two~~ at least three elements being said partial~~,~~ optical ~~active~~ solid media,

said optical third element being a compensation space filled with an optical transparent compensation medium,

said compensation medium having a close thermal contact to each of said adjacent partial optical solid media and being used in co-operation with said partial optical solid media,

said partial optical solid media and said compensation medium having different material properties and cooperate effectively for said compensating,

said different material properties are

a different absorption for said radiation of said beam,

a different thermal conduction or

a different thermal dispersion,

said different material properties causing the following effects

a heating by radiation absorption of said beam,

a distribution of temperature dependent on said heating by said thermal conduction, and

creating a thermal lens for said beam by said thermal dispersion dependent on said temperature distribution;

said optical solid media having a prescribed radiation absorption of the radiation of said beam by said absorption of the radiation of said beam and by said thermal conduction said temperature distribution is created in said optical solid media,

said temperature distribution

being imprinted by said close thermal contact to said compensating medium for compensating thermal optical effects in said partial optical solid media,

for the purpose of compensation said effects being distributed over said at least two partial optical solid media and said at least one compensation medium and there is no need for only one and the same optical element to fulfill all said functions.

11. (Previously Presented) Method according to claim 3, wherein said compensation medium and said adjacent solid bodies are cooled to the same temperature at their periphery in an encompassing fashion at the same radial distance from the axis of the beam path.

12. (Previously Presented) Method according to claim 2 for compensating thermal optical effects in a laser resonator,

said optical beam being a laser beam oscillating in said laser resonator,

said laser resonator having a pumping optical radiation,

said at least three optical elements having also a prescribed absorption for said pumping optical radiation,

said absorption for said pumping optical radiation being typically much stronger as compared to the absorption of the oscillating beam radiation,

both of said absorptions creating said heat.

13. (Previously Presented) Optical unit according to claim 5, wherein said optical compensation space is completely filled with said compensating medium.

14. (Previously Presented) Optical unit according to claim 5, wherein said compensation space extends radially symmetric to the optical axis of the beam path.

15. (Previously Presented) Optical unit according to claim 8, wherein said cooling holder completely encompasses the entire envelope of the solid bodies in close thermal contact.

16. (Currently Amended) Method for compensating thermal optical effects in an arrangement containing optical components generating or amplifying radiation,

said arrangement having a beam path for said generated or amplified radiation and including at least three optical transparent elements having close thermal contact,

said radiation being radiated in a beam,

adjacent elements of said at least three elements having different material properties,

said different material properties are

a different absorption for said radiation of said beam,

a different thermal conduction or

a different thermal dispersion,

said different material properties causing the following effects

a heating by radiation absorption of said beam,

a distribution of temperature dependent on said ~~radiation power~~ heating by said thermal conduction and

creating a thermal lens for said beam by said thermal dispersion dependent on said temperature distribution;

for the purpose of compensation said effects being distributed over said at least three elements and there is no need for only one and the same element to fulfill all said functions.

17. (Previously Presented) Method according to claim 16, wherein two not adjacent elements of said three optical elements are transparent optical solid bodies and at least one of said at least three elements between said optical solid bodies being a compensating medium,

said optical solid bodies being active media and having a prescribed radiation absorption, said method further comprising:

by said absorption of the radiation of said beam and said thermal conduction said temperature distribution is created in said optical solid bodies,

said temperature distribution being imprinted by said close thermal contact to said compensating medium for compensating thermal optical effects in said optical components and said adjacent elements, respectively.

18. (Previously Presented) Method according to claim 17, wherein said solid bodies have a prescribed absorption of a laser radiation in the beam path, said method further comprising:

cooling said compensation medium and said adjacent solid bodies to the same temperature at their periphery.

19. (Previously Presented) Method according to claim 18, wherein said cooling said compensation medium and said adjacent solid bodies to the same temperature at their periphery is in an encompassing fashion at the same radial distance from the axis of the beam path.

20. (Previously Presented) Method according to claim 17, wherein said arrangement containing optical components is a laser resonator,

said laser resonator having a pumping optical radiation entering said solid optical active media and being absorbed inside said optical media partially for pumping,

said absorption of said pumping optical radiation being typically much stronger as compared to the absorption of the radiation of the beam, therefore said different material properties of said solid optical active bodies and said optical transparent compensation medium causing the following effects,

a heating by radiation absorption of said beam and said pumping radiation,

a distribution of temperature dependent on said heating by said thermal conduction and

creating a thermal lens for said beam by said thermal dispersion dependent on said temperature distribution,

by said absorption of the radiation and said thermal conduction said temperature distribution is created in said solid optical active bodies, said temperature distribution being imprinted by said close thermal contact to said compensating medium for compensating said thermal optical effects.

21. (Previously Presented) Optical arrangement according to claim 10, having an optical pumping source generating a pumping radiation, said partial optical media having peripheries,

said pumping radiation entering each of said partial optical media by said peripheries and being absorbed inside said optical media partially for pumping,

said absorption of said pumping optical radiation being typically much stronger as compared to the absorption of the radiation of said beam,

therefore said different material properties of said at least two partial optical solid media and said at least one optical transparent compensation medium causing the following effects,

a heating by radiation absorption of said beam and said pumping radiation,

a distribution of temperature dependent on said heating by said thermal conduction and

creating a thermal lens for said beam by said thermal dispersion dependent on said temperature distribution,

by said absorption of the radiation and said thermal conduction said temperature distribution is created in said partial optical media,

said temperature distribution being imprinted by said close thermal contact to said compensating medium for compensating said thermal optical effects.

22. (Previously Presented) Optical arrangement according to claim 21, having cooling media,

said compensation medium having also peripheries,

said peripheries of said several partial optical media and of said compensation medium being cooled by said cooling media,

said pumping radiation passing said cooling media.